(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 4 November 2004 (04.11.2004)

PCT

(10) International Publication Number

(51) International Patent Classification⁷:

F16B 33/00

WO 2004/095877 A3

(21) International Application Number:

PCT/US2004/012341

- (22) International Filing Date: 21 April 2004 (21.04.2004)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10/420,954

22 April 2003 (22.04.2003)

- (71) Applicant (for all designated States except US): ACEN-TECH, INC. [US/US]; 33 Moulton Street, Cambridge, MA 02138 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HORRALL. Thomas, R.; 26 Bowers Road, Harvard, MA 01451 (US). HEINE, John, C.; 40 Cherry Brook Road, Weston, MA 02493 (US).
- (74) Agents: HEINE, Holliday, C. et al.; Weingarten, Schurgin, Gagnebin & Lebovici LLP, Ten Post Office Square, Boston, MA 02109 (US).

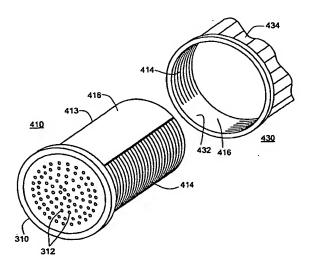
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI; FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,

[Continued on next page]

(54) Title: FASTENER AND NUT WITH AXIALLY INTERRUPTED THREADS



(57) Abstract: A sound masking system according to the invention is disclosed in which one or more sound masking loudspeaker assemblies are coupled to one or more electronic sound masking signal generators. The loudspeaker assemblies in the system of the invention have a low directivity index and preferably emit an acoustic sound masking signal that has a sound masking spectrum specifically designed to provide superior sound masking in an open plan office. Each of the plurality of loudspeaker assemblies is oriented to provide the acoustic sound masking signal in a direct path into the predetermined area in which masking sound is needed. In addition, a loudspeaker assembly is configured as a bolt and slip-nut threading system for ease of installation. The exterior surface of the loud speaker "bolt" and the interior surface of the locking nut contain axially oriented, reciprocal regions with and without threads.



CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA,

ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 27 October 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/12341

A. CLASSIFICATION OF SUBJECT MATTER IPC(7): F16B 33/00 US CL: 411/366.1, 385,457,418 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S.: 411/366.1, 385,457,418 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched EAST				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DERWENT, EPO, JPO, USPGPUB,				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages			Relevant to claim No.
х — Y	WO 90/06449 (FLAVENOT) 14 June 1990 (14.06.1990), whole document, esp. abstract and Figs 1-2.			1-3 · 4-8
A	A WO 02/10595 A2 (OZAWA) 7 Feb 2002 (07.02.2002), w		cument	1-8
	r documents are listed in the continuation of Box C.		See patent family annex.	
Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as		"T" later document published after the ir date and not in conflict with the app principle or theory underlying the in "X" document of particular relevance; the considered novel or cannot be consiled when the document is taken alone "Y" document of particular relevance; the		rvention te claimed invention cannot be dered to involve an inventive step
specified	specified)		considered to involve an inventive ste combined with one or more other suc being obvious to a person skilled in the	h documents, such combination
"P" document published prior to the international filing date but later than the priority date claimed		"&"		
Date of the actual completion of the international search 26 July 2005 (26.07.2005)		Date of mailing of the international search report 2 9 AUG 2005		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Katherine W. Mitchell Telephone No. 571-272-5150		

Form PCT/ISA/210 (second sheet) (January 2004)